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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/756,155	01/13/2004	Stefan Marinca	H0682.70001 US00	3331

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Boston, MA 02210

EXAMINER
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NGUYEN, MATTHEW VAN

ART UNIT	PAPER NUMBER
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2838

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/756,155

Applicant(s)

MARINCA, STEFAN

Examiner

MATTHEW V. NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 17 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 17-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-12 and 15 is/are rejected.
- 7) ☒ Claim(s) 3,4,13,14 and 16 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>1/13, 3/29, 5/31</u> . | 6) <input type="checkbox"/> Other: _____  |

1. Applicant's election without traverse of Group I, claims 1-16 in the reply filed on 2/17/06 is acknowledged.

2. The disclosure should be carefully reviewed and ensure that any and all grammatical, idiomatic, and spelling or other minor errors are corrected.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Ganesan et al. (U.S. Pat. No. 5,126,653).

With regard to claims 1, 2, 5 and 15, Ganesan et al. (i.e., Fig. 1) show a bandgap voltage reference circuit comprising an amplifier (M1-M4) having first (4) and second (3) input nodes for providing a reference voltage (Vout) at an output thereof, at least two pairs of transistors (Q8, Q1; and Q7, Q2) being bipolar transistors with first transistors (Q8, Q7) of each pair operating at a different current density to that of the second transistors (Q1, Q2) so that a difference in base emitter voltages between the two transistors of each pairing is generated and the pairs being arranged so that those transistors (Q8, Q7) having a first current density being provided in a chain coupled to the first input node and those transistors (Q1, Q2) having the second current density being provided in a chain coupled to the second input node, the combination of the  $\Delta V_{be}$  provided by

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each pair contributing to an enhanced  $\Delta V_{be}$  at the output of the amplifier, a third pair of transistors (Q6, Q3) also being provided, the enhance  $\Delta V_{be}$  being generated across a resistor (R2), the circuit being provided in a MOS (MM1-M16) process implementation, the amplifier also having an output coupled to a bipolar transistor (Q10) with the voltage reference (Vout) being provided at a node between the output of the amplifier and the follower (col. 2, line 38 – col. 4, line 2).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 6-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ganesan et al.

With regard to claims 6-12, Ganesan et al. show a bandgap voltage reference circuit comprising all the claimed subject matter as discussed above in subparagraph 3, except for the third pair of transistors being formed in lateral transistors (it is noted that the third pair of transistors in Ganesan et al. are bipolar).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to select the third pair of transistors being lateral, since the

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bipolar or lateral type of transistors are well known in the art, the selection of any these known type would be within the level of ordinary skill in the art.

5. Claims 3, 4, 13, 14 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

None of prior art of record taken alone or in combination shows a curvature correction voltage being generated by driving each of the three transistors operating at the first current density with a PTAT current and the other three transistors with a constant current, the sum of the curvature correction voltage and the  $3\Delta V_{be}$  being both applied across the resistor on the output of the amplifier for correcting the curvature and providing a temperature insensitive voltage reference output (as recited in claims 3, 4); or a MOS transistor provided at the output of the amplifier, being driven with a PTAT current with the base thereof being coupled directly to the output node of the amplifier and the emitter node providing an output of the circuit (as recited in claims 13, 14); or a voltage indicative of the temperature as sensed on the circuit being provided at the output of the amplifier, for providing a temperature sensor, the voltage indicative of the temperature being effected by driving each of the first and second chains of transistors with a PTAT current ( as recited in claim 16).

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6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Greaves et al. (U.S. Pat. No. 4,896,094), Holle (U.S. Pat. No. 4,897,595), Dooley et al. (U.S. Pat. No. 6,292,050), Brokaw (U.S. Pat. No. 6,304,109), Chen et al. (U.S. Pat. No. 6,690,228) and Rosenthal (U.S. Pat. No. 6,958,643) also disclose bandgap voltage reference voltage devices each of which comprises an amplifier and a circuit for providing a stable reference voltage

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew V. Nguyen whose telephone number is (571) 272-2081.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-2800.

*Matthew V. Nguyen*  
**MATTHEW V. NGUYEN**  
**PRIMARY EXAMINER**